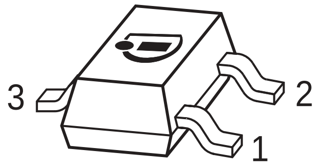
PNP Silicon RF Transistor

- For broadband amplifiers up to 2 GHz at collector currents up to 30 mA
- Complementary type: BFR92P (NPN)



ESD (**E**lectro**s**tatic **d**ischarge) sensitive device, observe handling precaution!

Type	Marking	Pin Configuration			Package
BFT92	W1s	1 = B	2 = E	3 = C	SOT23

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	15	V
Collector-emitter voltage	V_{CES}	20	
Collector-base voltage	V_{CBO}	20	
Emitter-base voltage	V_{EBO}	2	
Collector current	I_C	45	mA
Base current	I_B	5	
Total power dissipation[1)] $T_S \leq 78°C$	P_{tot}	200	mW
Junction temperature	T_j	150	°C
Ambient temperature	T_A	-65 ... 150	
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[2)]	R_{thJS}	≤ 360	K/W

[1]T_S is measured on the collector lead at the soldering point to the pcb

[2]For calculation of R_{thJA} please refer to Application Note Thermal Resistance

Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 1 mA, I_B = 0	$V_{(BR)CEO}$	15	-	-	V
Collector-emitter cutoff current V_{CE} = 20 V, V_{BE} = 0	I_{CES}	-	-	100	µA
Collector-base cutoff current V_{CB} = 10 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 1 V, I_C = 0	I_{EBO}	-	-	1	µA
DC current gain- I_C = 15 mA, V_{CE} = 8 V, pulse measured	h_{FE}	20	40	70	-

Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics (verified by random sampling)					
Transition frequency I_C = 15 mA, V_{CE} = 8 V, f = 500 MHz	f_T	3.5	5	-	GHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz, V_{BE} = 0 , emitter grounded	C_{cb}	-	0.56	0.9	pF
Collector emitter capacitance V_{CE} = 10 V, f = 1 MHz, V_{BE} = 0 , base grounded	C_{ce}	-	0.35	-	
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz, V_{CB} = 0 , collector grounded	C_{eb}	-	0.7	-	
Noise figure	F				dB
I_C = 2 mA, V_{CE} = 8 V, $Z_S = Z_{Sopt}$, f = 900 MHz		-	2	-	
I_C = 2 mA, V_{CE} = 8 V, $Z_S = Z_{Sopt}$, f = 1.8 GHz		-	3	-	
Power gain, maximum available[1]	G_{ma}				
I_C = 15 mA, V_{CE} = 8 V, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, f = 900 MHz		-	13.5	-	
I_C = 15 mA, V_{CE} = 8 V, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, f = 1.8 GHz		-	8	-	
Transducer gain	$\|S_{21e}\|^2$				dB
I_C = 15 mA, V_{CE} = 8 V, $Z_S = Z_L$ = 50Ω , f = 900 MHz		-	11.5	-	
I_C = 15 mA, V_{CE} = 8 V, $Z_S = Z_L$ = 50Ω , f = 1.8 GHz		-	6	-	

[1] $G_{ma} = |S_{21} / S_{12}| (k-(k^2-1)^{1/2})$

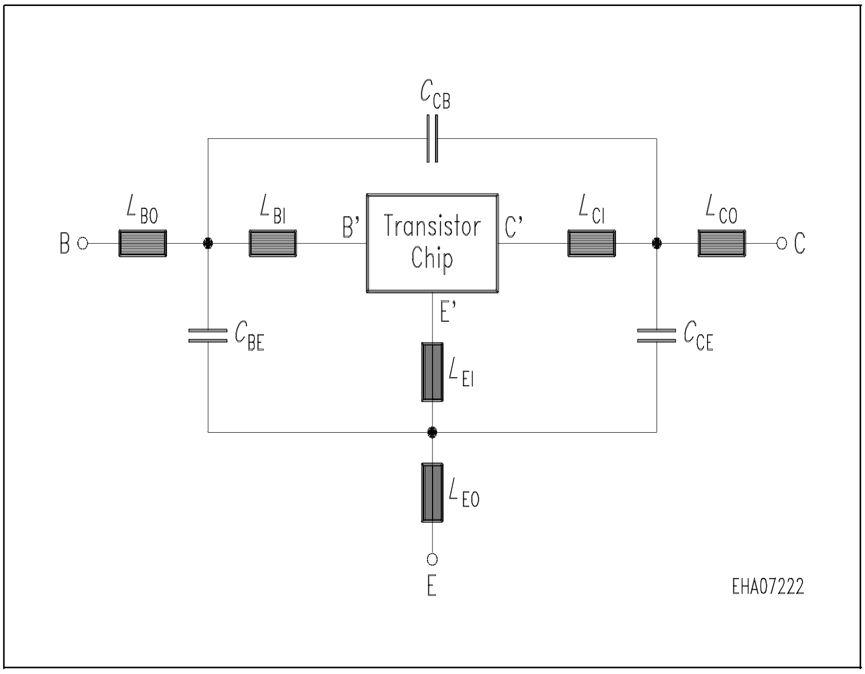
SPICE Parameter (Gummel-Poon Model, Berkley-SPICE 2G.6 Syntax):

Transitor Chip Data:

IS =	4.5354	fA	BF =	98.533	-	NF =	0.90551	-
VAF =	10.983	V	IKF =	0.016123	A	ISE =	12.196	fA
NE =	1.1172	-	BR =	10.297	-	NR =	1.2703	-
VAR =	47.577	V	IKR =	0.019729	A	ISC =	0.024709	fA
NC =	1.206	-	RB =	7.9562	Ω	IRB =	0.79584	mA
RBM =	1.5939	Ω	RE =	1.5119	-	RC =	0.66749	Ω
CJE =	1.7785	fF	VJE =	0.79082	V	MJE =	0.32167	-
TF =	32.171	ps	XTF =	0.30227	-	VTF =	0.21451	V
ITF =	0.013277	mA	PTF =	0	deg	CJC =	922.07	fF
VJC =	1.2	V	MJC =	0.3	-	XCJC =	0.3	-
TR =	2.0779	ns	CJS =	0	fF	VJS =	0.75	V
MJS =	0	-	NK =	0	-	EG =	1.11	eV
XTI =	3	-	FC =	0.75167		TNOM	300	K

All parameters are ready to use, no scalling is necessary. Extracted on behalf of Infineon Technologies AG by: Institut für Mobil- und Satellitentechnik (IMST)

Package Equivalent Circuit:

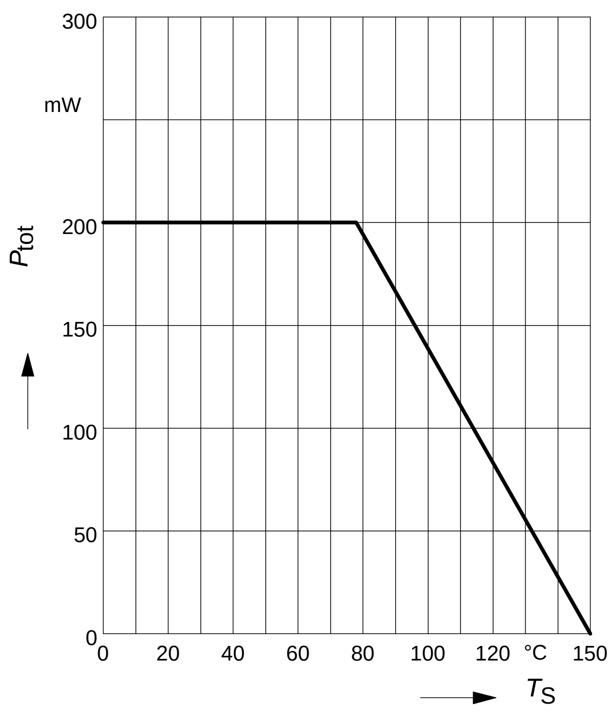


L_{BI} =	0.84	nH
L_{BO} =	0.51	nH
L_{EI} =	0.69	nH
L_{EO} =	0.61	nH
L_{CI} =	0	nH
L_{CO} =	0.49	nH
C_{BE} =	-	fF
C_{CB} =	84	fF
C_{CE} =	165	fF

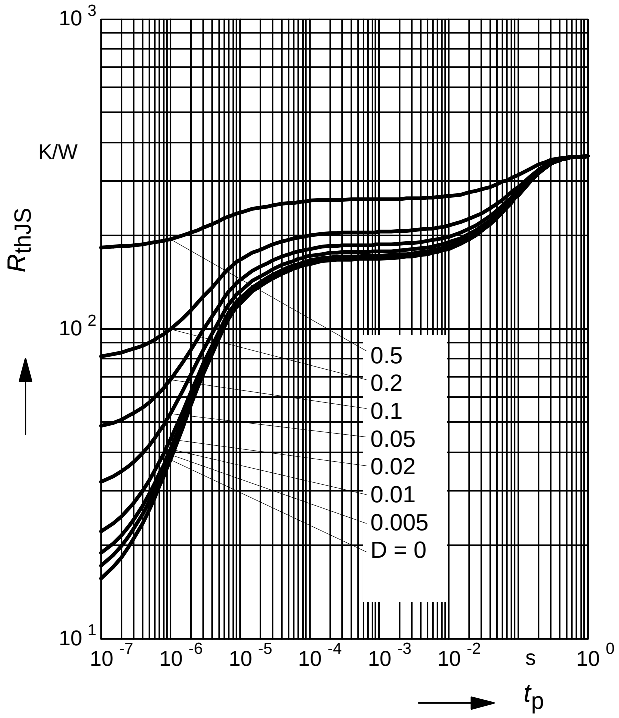
Valid up to 6GHz

For examples and ready to use parameters please contact your local Infineon Technologies distributor or sales office to obtain a Infineon Technologies CD-ROM or see Internet: http//www.infineon.com/silicondiscretes

Total power dissipation $P_{tot} = f(T_S)$

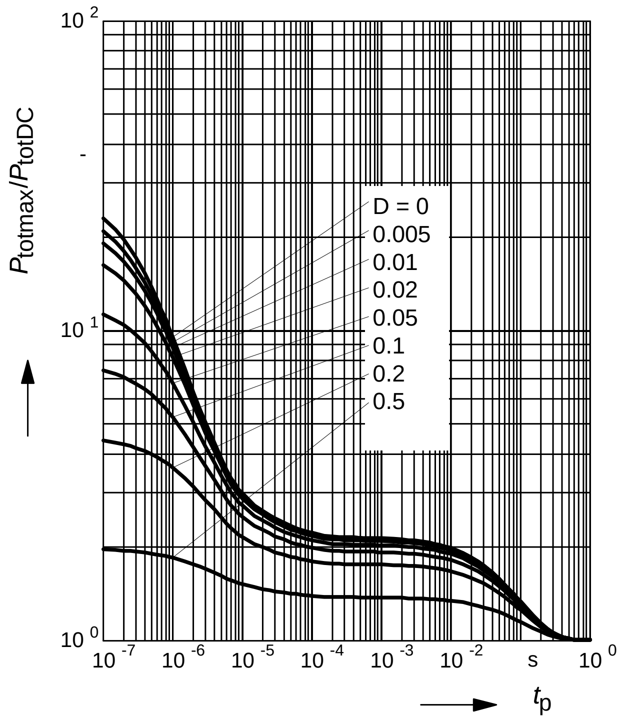


Permissible Pulse Load $R_{thJS} = f(t_p)$



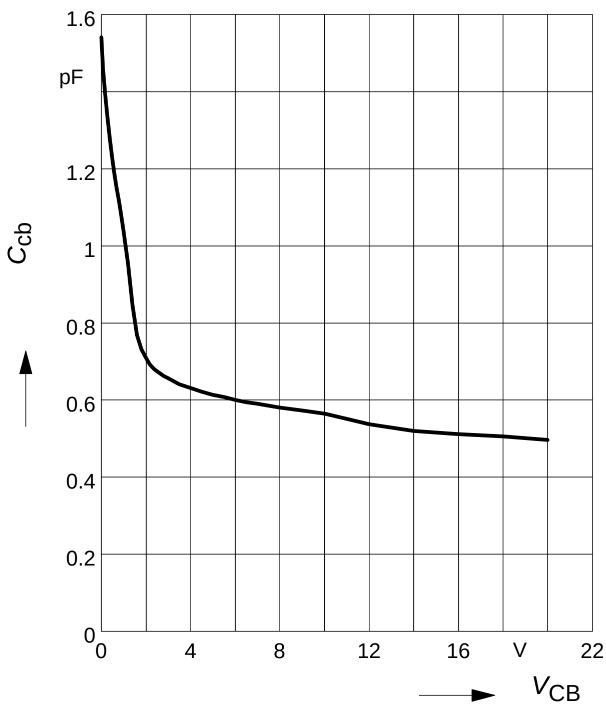
Permissible Pulse Load

$P_{totmax}/P_{totDC} = f(t_p)$



Collector-base capacitance $C_{cb} = f(V_{CB})$

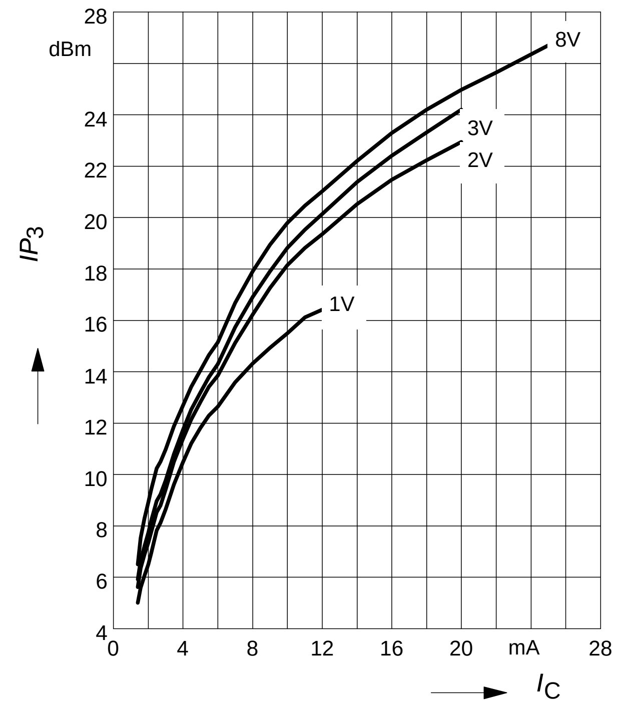
f = 1MHz



Third order Intercept Point $IP_3 = f(I_C)$

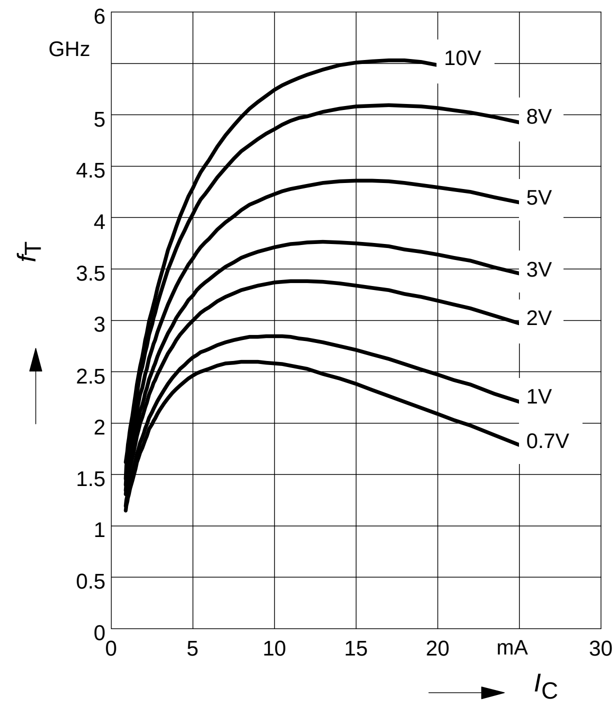
(3rd order, Output, $Z_S = Z_L = 50\ \Omega$)

V_{CE} = parameter, f = 900MHz



Transition frequency $f_T = f(I_C)$

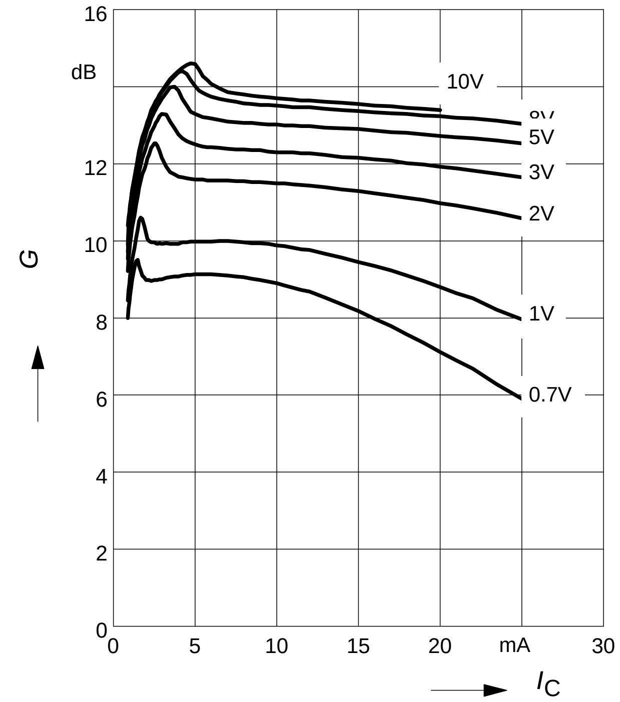
V_{CE} = parameter



Power gain G_{ma}, $G_{ms} = f(I_C)$

f = 0.9GHz

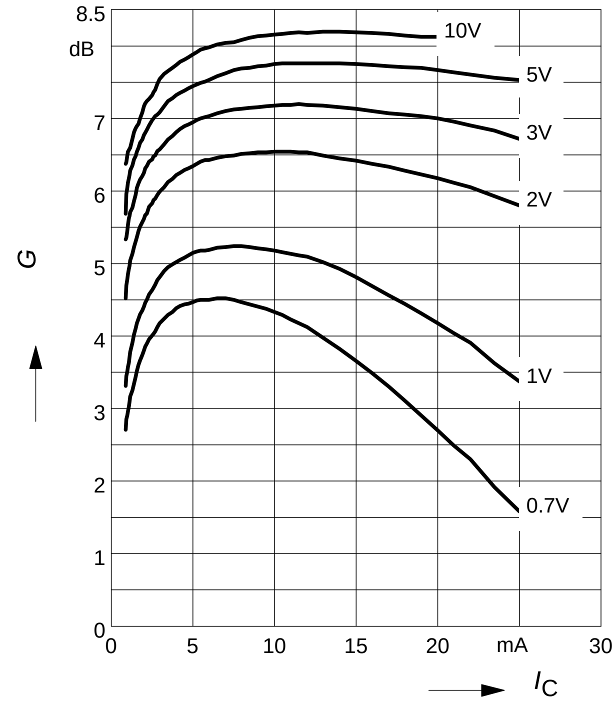
V_{CE} = parameter



Power gain G_{ma}, $G_{ms} = f(I_C)$

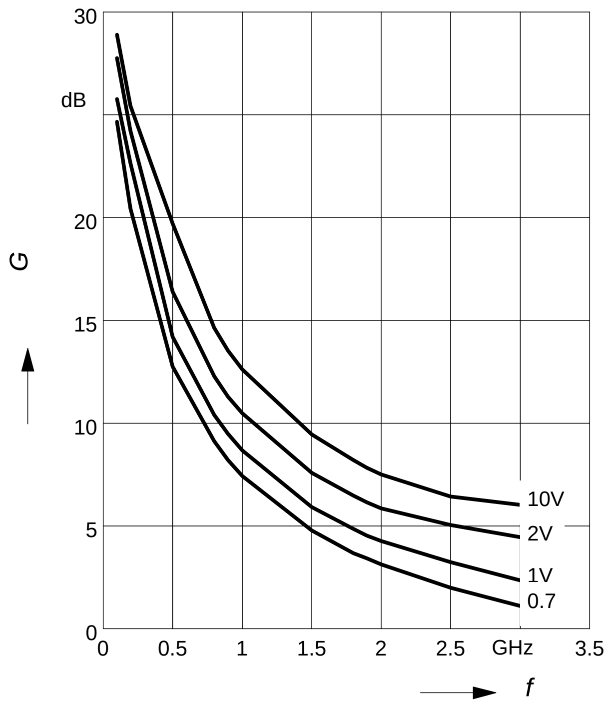
f = 1.8GHz

V_{CE} = parameter



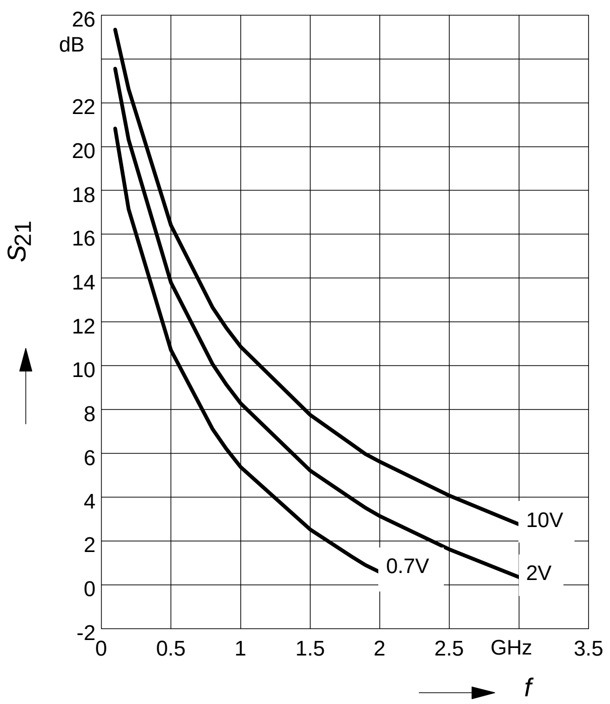
Power Gain G_{ma}, G_{ms} = $f(f)$

V_{CE} = parameter, I_C = 15 mA



Power Gain $|S_{21}|^2$ = $f(f)$

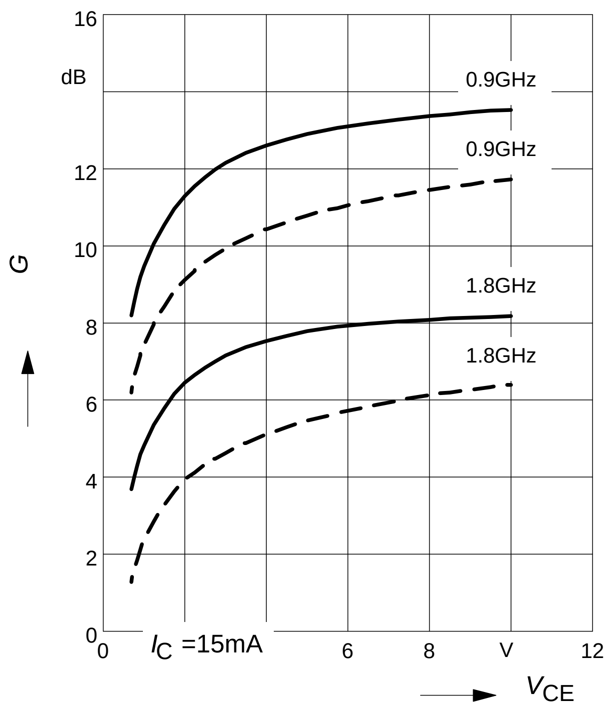
V_{CE} = parameter, I_C = 15 mA



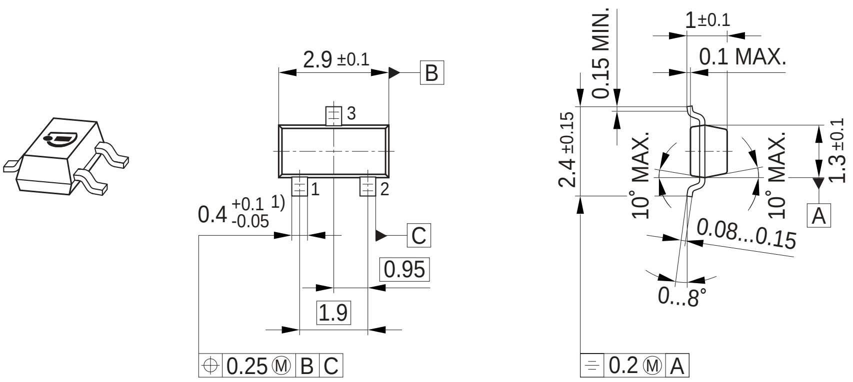
Power Gain G_{ma}, G_{ms} = $f(V_{CE})$: ——

$|S_{21}|^2$ = $f(V_{CE})$: - - - -

f = parameter, I_C = 15 mA

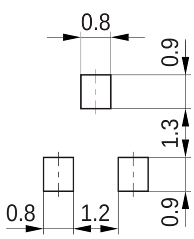


Package Outline

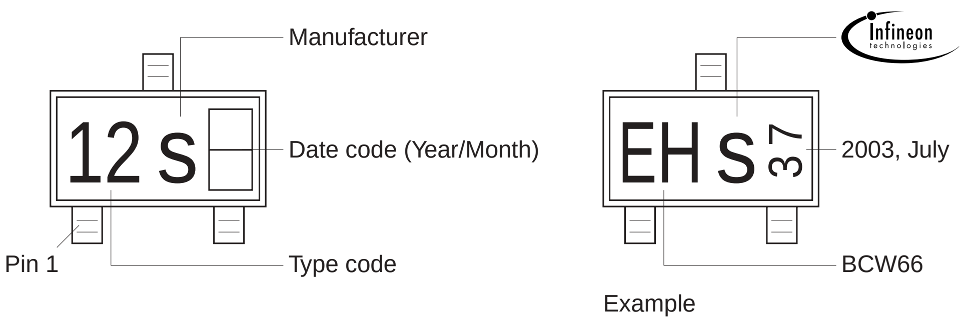


1) Lead width can be 0.6 max. in dambar area

Foot Print

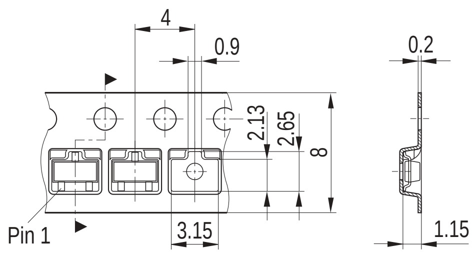


Marking Layout



Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



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